

## 5.5 Hyperbolas

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Find the vertices and foci of the hyperbola.

1)  $\frac{y^2}{36} - \frac{x^2}{13} = 1$

1) \_\_\_\_\_

2)  $9x^2 - 4y^2 = 36$

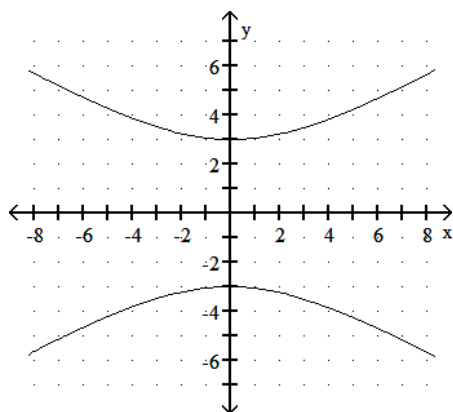
2) \_\_\_\_\_

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Match the given graph with its equation.

3)

3) \_\_\_\_\_



A)  $\frac{x^2}{9} + \frac{y^2}{25} = 1$

B)  $\frac{y^2}{9} + \frac{x^2}{25} = 1$

C)  $\frac{y^2}{25} - \frac{x^2}{9} = 1$

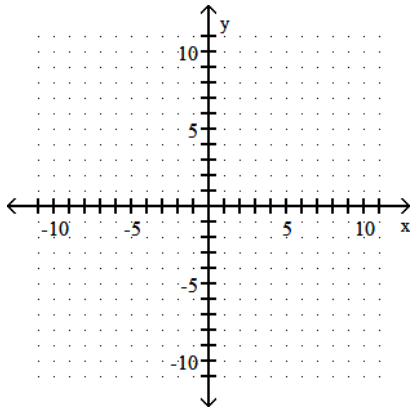
D)  $\frac{y^2}{9} - \frac{x^2}{25} = 1$

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Graph the hyperbola.

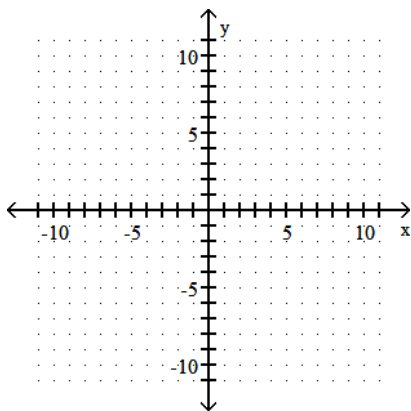
4)  $\frac{y^2}{64} - \frac{x^2}{25} = 1$

4) \_\_\_\_\_



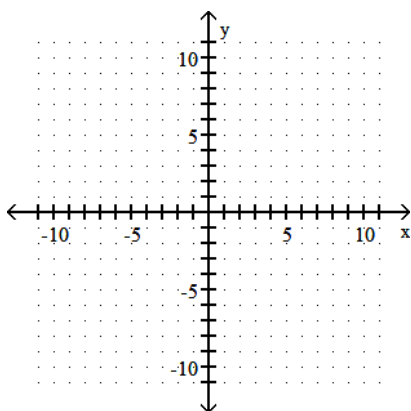
5)  $\frac{(x+3)^2}{16} - \frac{(y-1)^2}{4} = 1$

5) \_\_\_\_\_



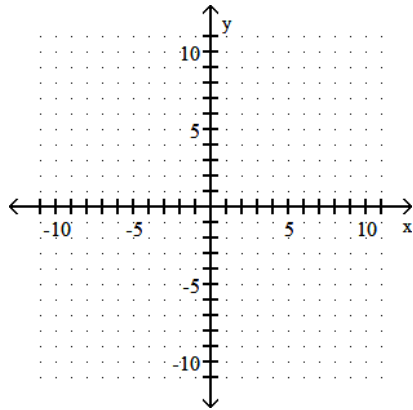
6)  $\frac{y^2}{64} - \frac{x^2}{16} = 1$

6) \_\_\_\_\_



7)  $\frac{x^2}{4} - \frac{(y-3)^2}{5} = 1$

7) \_\_\_\_\_



Find an equation in standard form for the hyperbola that satisfies the given conditions.

8) Foci at  $(0, \pm 3)$ , transverse axis with length 4

8) \_\_\_\_\_

9) Center  $(0, 0)$ ,  $a = 5$ ,  $e = 2$ , horizontal focal axis

9) \_\_\_\_\_

10) Center  $(0, 0)$ ,  $c = 6$ ,  $e = 2$ , horizontal focal axis

10) \_\_\_\_\_

11) Transverse axis endpoints  $(-1, 3)$  and  $(5, 3)$ , slope of one asymptote  $4/3$

11) \_\_\_\_\_

12) Foci  $(-3, -11)$  and  $(-3, 0)$ , transverse axis endpoints  $(-3, -9)$  and  $(-3, -2)$

12) \_\_\_\_\_

Find the center, vertices and foci of the hyperbola.

$$13) \frac{(x+1)^2}{144} - \frac{(y-2)^2}{25} = 1$$

13) \_\_\_\_\_

Find the vertices and foci of the hyperbola.

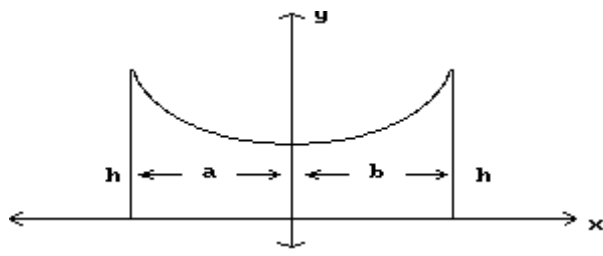
$$14) \frac{(y-1)^2}{25} - \frac{(x+5)^2}{11} = 1$$

14) \_\_\_\_\_

Solve the problem.

- 15) The roof of a building is in the shape of the hyperbola  $y^2 - x^2 = 64$ , where  $x$  and  $y$  are in meters. Refer to the figure and determine the height  $h$  of the outside walls.

15) \_\_\_\_\_



$$a = b = 5 \text{ m}$$